

Abstract of the Disclosure

A rotating stirring device for generating substantially narrow distribution of energy dissipation rate and avoiding presence of Taylor vortices is disclosed. The device includes an outer member (1) such as a cylinder with cross-section of circular shape and an inner member (2) with cross-section of equilateral or inequilateral polygon shape with curved cusps. The inner member is preferably concentrically placed within the outer cylinder and rotates. Such device is particularly advantageous as a reactor or mixer for processes where chemical and physical properties are sensitive to the variations in the shear rate and for processes that involve fragile components. The device can be also used to replace Taylor Couette device for the purposes of improving mass transfer and of avoiding separate of components in the gap in the case of presence of differences in density among components.